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# Public procurement and SMEs' innovation in the UK

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## Executive Summary

Public procurement, which accounts for nearly 15% of GDP in OECD countries and constitutes a third of total UK public spending (£385 billion), is increasingly recognised as a strategic policy tool for fostering innovation. As a demand-pull policy, public contracts for products and services signal market needs for new processes, products, or technologies, thereby driving innovation in targeted areas. This research brief examines the patenting behaviour of UK SMEs engaged in public procurement. Analysing 28,806 observations from 9,712 patenting SMEs (2016-2019), we find that:

- Government suppliers engage in both incremental innovation (patents in familiar technological areas) and exploratory innovation (patents in new domains), outperforming non-suppliers in both categories.
- Government suppliers file patents at higher rates than non-suppliers and show more resilience in maintaining patent activity over time, with a slower decline in patenting rates during 2016-2019.
- Central government suppliers demonstrate particular strength in advanced technology domains (Physics and Electricity), while local government suppliers focus more on applied fields (Mechanical Engineering and Transportation), suggesting procurement influences technological direction.

# Introduction

The UK government has identified procurement as a key lever for innovation, as evidenced by the 2023 UK Science and Technology Framework and the Invest 2035 Industrial Strategy Green Paper (UK Government, 2024). Additionally, the new Procurement Act aims to streamline procurement processes and improve access for small businesses and social enterprises to promote innovation and social value. SMEs constitute 99% of UK businesses and employ 61% of the workforce (House of Commons Library, 2024). However, in 2023, SMEs accounted for only 20% of direct UK public sector procurement spending—a marginal increase from 18% in 2018 (British Chambers of Commerce & Tussell, 2024). These figures underscore the need for more effective policies and strategies to unlock the potential of SMEs in driving innovation through public procurement.

In this research brief we seek to understand whether and how public procurement affects innovation in SMEs. Our sample of innovative firms includes all UK patent applicants from Orbis Intellectual Property (Orbis IP) who have filed at least one patent with any of the three principal offices for UK applicants: the UK Intellectual Property Office (UK IPO), the European Patent Office (EPO), and the United States Patent and Trademark Office (USPTO). We are conscious of the limitations of using patents as measure of innovation. While patents serve as an innovation indicator, they capture only part of the innovation landscape. Not all innovations result in patents, nor are they all patentable. Further, companies often utilize alternative methods to capitalize on and protect their innovations, such as trade secrets and first-mover advantages.

To identify innovative firms that supply to the public sector, we link the UK patent applicants to public procurement data from the Tussell database covering the period from 2016 to 2019. Our sample ends in 2019 for two key reasons. First, we intentionally focus on the period preceding the Covid-19 pandemic. To avoid analytical bias stemming from this

extraordinary period, our analysis is confined to procurement activities occurring between 2016 and 2019. Second, the development of patents from initial investments typically requires more than one year. Ultimately, our final sample comprises 28,806 observations of 9,712 UK patenting SMEs spanning the years 2016 to 2019. This dataset allows us to explore the interplay between public procurement and SME innovation comprehensively, shedding light on how government contracts may catalyse inventive activities in the private sector.

## The proportion of government suppliers among patenting UK SMEs

Figure 1 shows the proportion of UK SME innovators supplying to government buyers between 2016 to 2019 including all government, central government, and local government. Over this period, the overall proportion of SME innovators supplying to government reached its highest point in 2019 at approximately 12%.

This increase is accounted for mainly due to SMEs supplying to central government departments, compared with local government suppliers which represent a smaller proportion of the total innovative SMEs, although 2019 figures indicate that local authorities may be increasingly working with innovative SMEs.

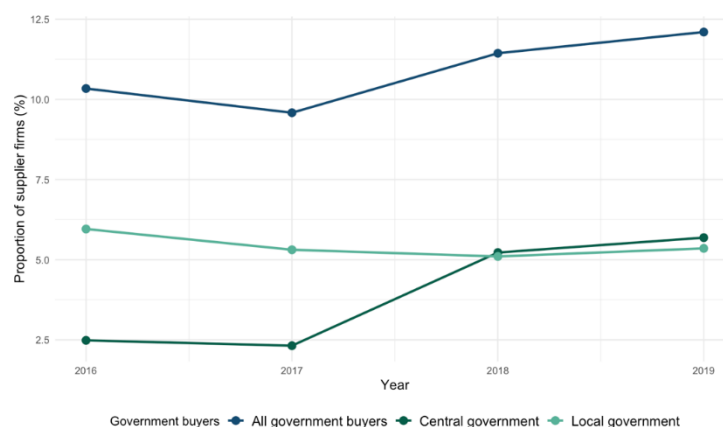


Figure 1 Proportion of gov suppliers among UK SME innovators over time

To assess the impact of public procurement on innovation, we focus on SME patenting activities in the three years after their initial procurement engagement. Figure 2 reveals that SMEs supplying goods and services to the government consistently patent more compared to non-suppliers. Across all years, government suppliers maintain an innovation advantage, suggesting that public procurement plays a role in incentivising and enabling development of new processes, products and technologies.

While a decline in patent filings is observed over time, this trend is likely attributable to the delayed nature of patent data capture rather than a reduction in innovation itself. Crucially, the decline among government suppliers is significantly slower and less pronounced than for non-suppliers. This relative stability highlights the role of public procurement in mitigating potential barriers to sustained innovation.

In Figure 3 we further disaggregate innovation by central and local government procurement. SMEs supplying to central government consistently achieve higher levels of patenting activity, particularly in 2016 and 2017. This likely reflects the greater scale and strategic focus of central government contracts, which are often designed to target innovation-driven

outcomes. However, the gap between central and local government suppliers narrows over time. By 2019, local government suppliers demonstrate a more consistent level of patenting, indicating an increasing capacity of local authorities to engage SMEs in innovation-oriented procurement. This shift suggests that local governments are progressively aligning their procurement practices with national innovation policy objectives, expanding opportunities for SMEs to innovate at the regional level.

This analysis shows that SMEs that are government suppliers consistently outperform non-suppliers in follow-on patenting, with a smaller and slower decline in patent filings over time. Central government procurement remains a stronger driver for innovative SMEs due to its scale and focus on strategic outcomes. However, the narrowing gap between central and local government suppliers indicates an encouraging trend in the role of local procurement in supporting innovation. These findings demonstrate the value of public procurement as a key lever for stimulating innovation in SMEs, with implications for further strengthening both central and local government procurement to maximise their impact.

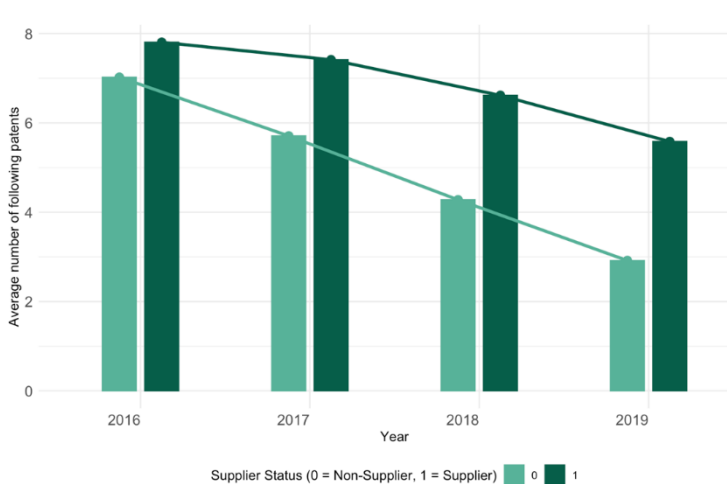


Figure 2 Comparison of patenting rates between SME suppliers and non-suppliers

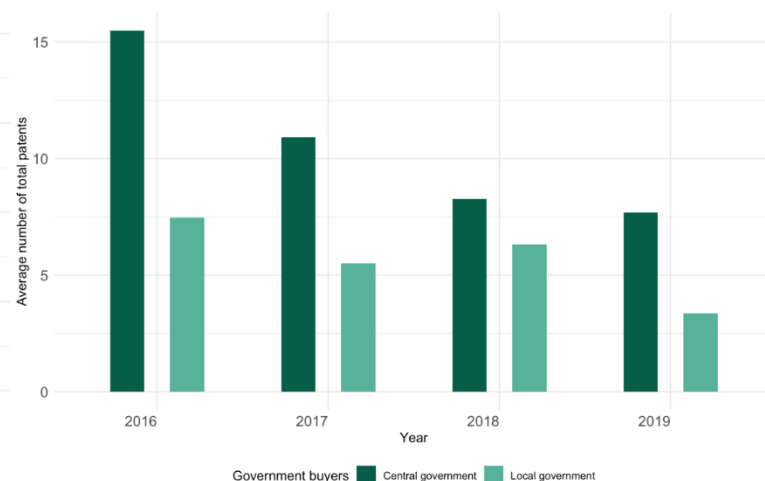


Figure 3 Comparison of patenting rates between SME supplying to central government and local government

## Do UK public sector suppliers patent differently?

To further investigate how public procurement influences SME innovation, we distinguish between new and known patents based on their International Patent Classification (IPC). Following prior studies (e.g., Tzabbar and Kehoe, 2014; Gao et al., 2018), new patents are defined as those filed in IPC classes where the firm has not filed any patents within the past five years. Known patents are those filed in IPC classes where the firm has prior filings within the same period.

Figure 4 highlights that government suppliers consistently outperform non-suppliers in both known and new patents. This suggests that public procurement enables firms to sustain their inventive activities in both familiar and novel technological domains. The higher number of known patents among government suppliers indicates that procurement supports incremental innovation, allowing SMEs to build upon existing technological expertise. Simultaneously, the increased number of new patents demonstrates that public procurement also encourages exploratory innovation, enabling firms to venture into new

technological fields in response to the demands of public contracts.

While both known and new patents show an overall decline over the years, the decline is noticeably slower for government suppliers. This pattern suggests that public procurement acts as a stabilising force, helping SMEs maintain higher levels of innovation compared to non-suppliers. For known patents, the slower decline reflects sustained incremental innovation within familiar IPC classes. For new patents, the relatively stronger performance of government suppliers indicates that procurement provides the resources and incentives for SMEs to expand into new technological areas, aligning with the goals of many innovation-driven procurement strategies.

Overall, the distinction between new and known patents highlights the dual role of public procurement in fostering both incremental and exploratory innovation among SMEs. Government suppliers not only sustain existing innovation trajectories but also achieve higher levels of diversification into new technological domains.

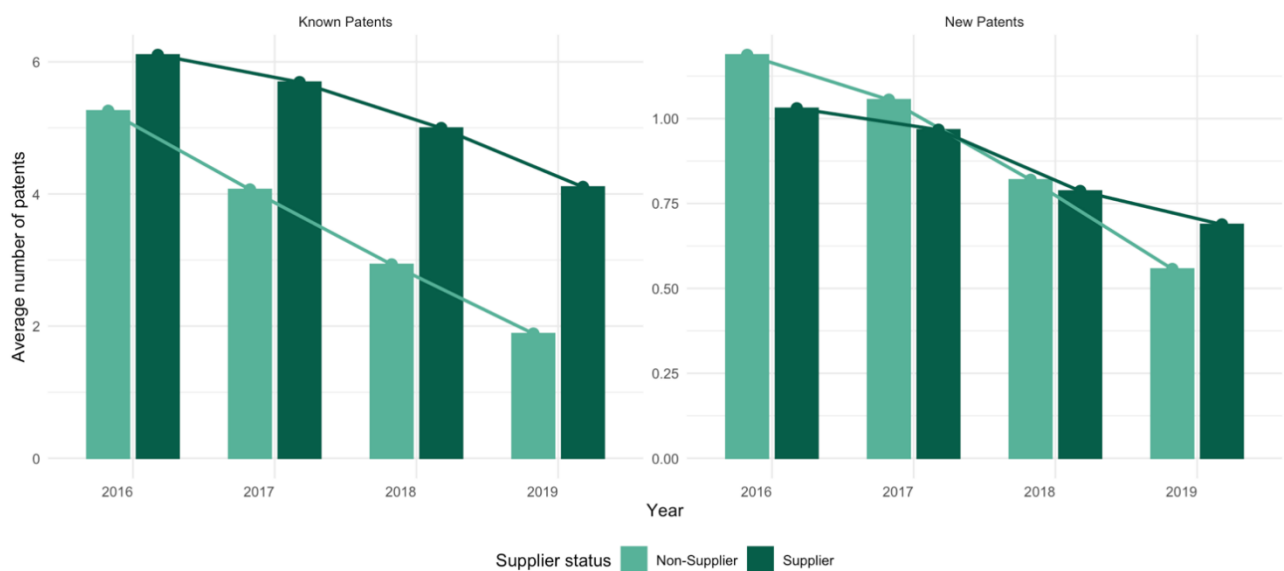


Figure 4 New vs. Known patents across non-gov and gov suppliers

## Do UK public sector suppliers patent in different domains?

We explore whether UK public sector suppliers patent in distinct technological domains, compared to non-suppliers, by examining the distribution of patents across IPC classes. Figure 5 compares patent classes for government suppliers and non-suppliers, while Figure 6 provides further insights by differentiating between central and local government suppliers.

Figure 5 reveals clear differences in patenting behaviour between government suppliers and non-suppliers across IPC classes. Government suppliers demonstrate a stronger presence in high-impact domains such as H (Electricity) and G (Physics). These fields often involve cutting-edge technologies and innovation-intensive activities, which are frequently aligned with the needs of public sector contracts in areas like infrastructure, energy systems, and advanced technology solutions. In contrast, non-suppliers show higher patenting activity in more traditional domains such as A (Human Necessities) and B (Performing Operations; Transporting). These domains typically align with consumer-focused

innovations, reflecting the market-driven priorities of non-suppliers. This divergence suggests that government contracts may encourage suppliers to focus on more complex, technology-intensive fields that address public sector demands.

Figure 6 further disaggregates patenting behaviour between central and local government suppliers. Central government suppliers show a particularly strong focus on H (Electricity) and G (Physics), reflecting the strategic nature of central government contracts, which often require advanced technological solutions for national priorities such as energy, defence, and public infrastructure. Local government suppliers, while still active in these domains, show a comparatively stronger focus on B (Performing Operations; Transporting) and F (Mechanical Engineering). These fields align more closely with local government responsibilities, such as transportation systems, public works, and community-level infrastructure projects.

The analysis highlights significant differences in the technological focus of SME innovators engaged with public procurement. Government suppliers are more active in high-impact,

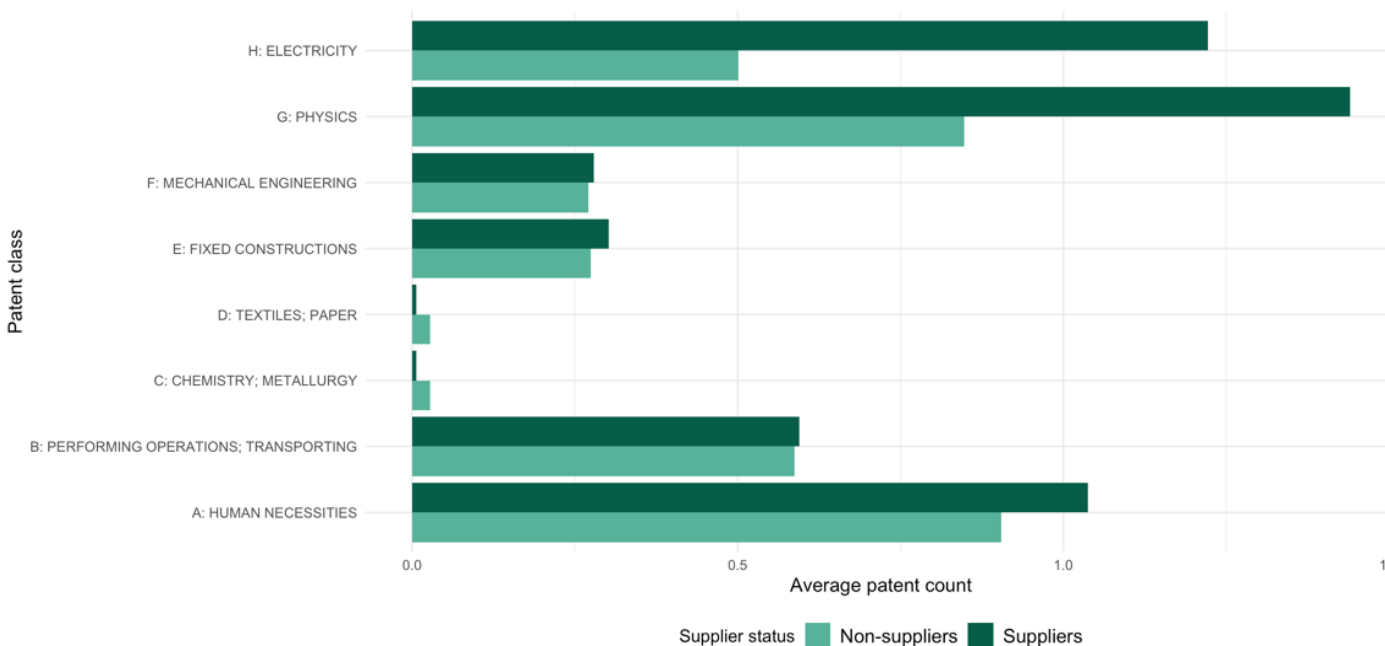


Figure 5 Patent classes across non-gov and gov suppliers

technology-intensive domains compared to non-suppliers, reflecting the influence of public sector needs on innovation priorities.

Furthermore, central government procurement drives innovation in advanced technological domains such as electricity and physics, while local government procurement supports innovations in more applied fields like mechanical engineering and transportation. These findings further emphasise the role of public procurement in shaping the technological direction of SME innovation. By engaging SMEs in diverse technological domains, central and local governments can play complementary roles in driving both advanced and applied innovations, contributing to broader economic and societal objectives.

## Conclusion

This research brief examines the patenting behaviour of UK SMEs engaged in public procurement between 2016-2019. Our analysis reveals that government suppliers

exhibit distinct patenting patterns compared to non-suppliers, both in patent volume and technological focus. Government suppliers demonstrate higher patenting rates and slower decline in innovative activity compared to non-suppliers, with central government contracts driving advanced technological innovation and local government fostering applied solutions.

To maximise impact, policies should simplify public procurement processes, encourage SME participation, and embed innovation-focused criteria in contracts. Enhancing local government's role in innovation-driven procurement can further support regional development while broadening SME opportunities.

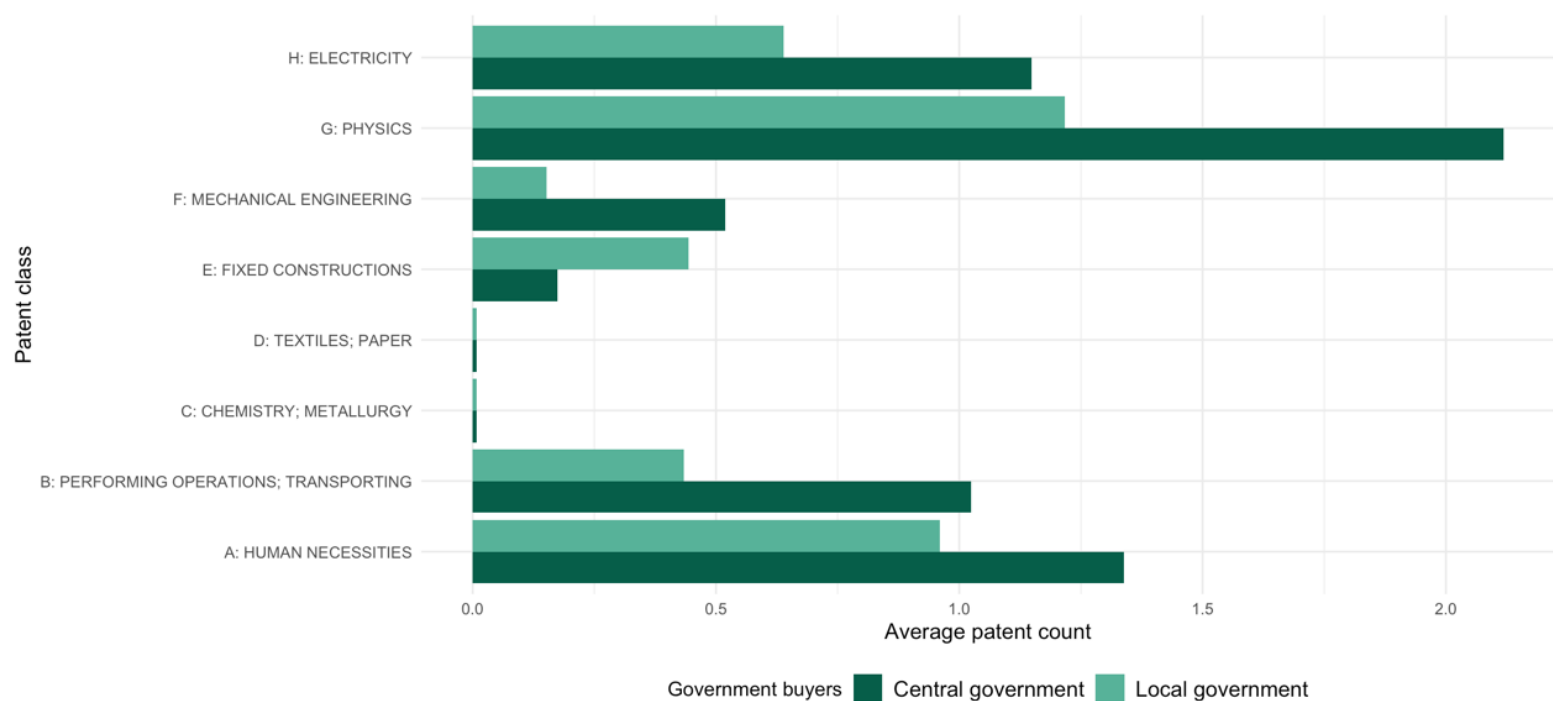


Figure 6 Patent classes across central-gov and local-gov suppliers



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